Utah Renewable Energy Zone Work Group Criteria-Phase 1 Resource Zone Identification

WORKING DRAFT

I. Overview

The Utah Renewable Energy Zone (UREZ) working groups (Wind, Solar, and Geothermal) will identify geographically concentrated renewable resources in Utah that could potentially serve as a source for large-scale electrical generation. This Phase 1 assessment will be achieved by incorporating past renewable resource assessments and will include new and existing resource specific data. Identified UREZ resource areas will serve as a base upon which restrictions relating to land use, local, state, or federal limitations, and sensitive environmental lands may be layered. Potential restrictive areas will be identified for potential mitigation and/or for exclusion.

II. Criteria of UREZ Work Groups

A. Wind Resource Identification Work Group

- Identify Resource Quality
  - Wind resource zones will be categorized by geographic landscape, e.g., canyon drainage; ridgeline; mountain gap/pass; and/or valley.
  - Estimate of basic energy resource potential
    - Resource quality in zone(s) will be identified by Wind Class.[1]
  - Estimate for electrical energy potential
    - Resource quality in zone(s) will be measured by a generation capacity in megawatts (MW_e) per square kilometer or linear kilometer.[2]
  - Resource quality threshold in zone(s) will be established by a minimum generation capacity threshold of 10 MW_e for canyon drainage zone(s) and 50MW_e for ridgeline/mountain gap/pass and/or valley zone(s)
  - Resource quality threshold in zone(s) will be established by a minimum generation gross capacity factor of 20 percent.[3]

- Identify Extent of a Zone

---

[1] Wind Class is defined by wind power density, which is measured in watts per square meter and indicates how much energy is available at the site for conversion by a wind turbine. Wind classes range from a low at Class 1-and a high at Class 7; Class 3 being the starting point at which commercial development is feasible.

[2] Generation capacity or nameplate capacity is the maximum rated output of a generator or other electric power production equipment under specific conditions designated by the manufacturer. Installed generator nameplate capacity is commonly expressed in megawatts (MW) and is usually indicated on a nameplate physically attached to the generator.

[3] Capacity factor is the ratio of the electrical energy produced by a generating unit, for the period of time considered, to the electrical energy that could have been produced at continuous full power operation during the same period.

- Zone identification will exclude the following areas the following potential zoning restrictions:
    - Sensitive lands, e.g., federally designated wilderness and wilderness study areas; state and national parks.
    - Designated Military Operating Airspace (MOA) and Military Test and Training Reserves

B. Solar Resource Identification Work Group

- Identify Resource Quality
    - Estimate of basic energy resource potential
        - Resource quality in zone(s) will be measured by Direct Normal Solar Radiation (DNR) ($kW_t h/m_2$ /day).
    - Estimate of electrical energy potential
        - Resource quality in zone(s) will be measured by a generation capacity (MW_e) per square kilometer.
        - Resource quality in zone(s) will be measured by energy production (MW_e h/year) per square kilometer.
    - Resource quality threshold in zone(s) will be established by a minimum Direct Normal Solar Radiation value of 6.5 kW_t h/sq. meter/day.
    - Resource concentration (percent of area at or above the DNR threshold) will be identified for each zone).

- Identify Extent of a Zone
    - Zone identification will identify the following potential zoning restrictions:
        - Sensitive lands, e.g., federally designated wilderness and wilderness study areas; state and national parks.
        - Water availability[4]
    - Zone analysis will be conducted with a slope factor of >1 percent slope and/or >3 percent slope

C. Geothermal Resource Identification Working Group

- Identify Resource Quality
    - Estimate of basic energy resource potential
        - Thermal resource potential will be estimated based on heat flow and temperature depth trends, and possible reservoir areas. Data may come from primary or secondary sources.
        - Resource quality will be measured in gross generating capacity (MW_t)

    - Estimate of electrical energy potential

[4] Current Concentrating Solar Technology (CSP) relies on water cooling in the system design. However, air cooling technology is available and may prove to be more cost effective in the future.

        - Generating Capacity will be an estimate of near-term generating capacity (<10 years) and long-term generating capacity (10-20 years)
- Identify Extent of Zone
    - Zone identification will identify the following potential zoning restrictions:
        - Sensitive lands, e.g., federally designated wilderness and wilderness study areas; state and national parks.
    - Water quality/rights

Units of Measurement

kW= kilowatt
MW=megawatt
MW_e = electrical equivalent of a MW of power
MW_t = thermal equivalent of a MW of power
kWh= kilowatt hours
MWh= megawatt hour